

## **Environmental Concerns and Options for Resolution: 7/7/10**

Concern 1: Uncertainty of groundwater flow once Treated Water Infiltration System (TWIS) is operational

Solution 1: Additional wells to monitor groundwater elevation

- Add three wells several hundred feet to the northeast, east and southeast of the TWIS. (Two general areas where these wells might be located are shown by the blue circles on the map; the third well would be within the blue rectangle.) This information will determine the local groundwater flow direction with more certainty and provide a timely warning should problems arise due to any groundwater mounding at the site. One of the wells intended for monitoring of groundwater chemistry could also function as a groundwater elevation monitoring point.

Concern 2: Uncertainty regarding the interaction between the introduced wastewater and the existing groundwater aquifer

Solution 2: Additional wells to monitor groundwater chemistry

- Add three wells to be located several hundred feet downgradient (in the direction of predicted groundwater flow) of the TWIS (the area of the blue rectangle on the attached map). These wells would provide more robust groundwater monitoring beyond the currently-required wells in the area of the TWIS to measure whether any interaction between the introduced wastewater and the existing groundwater and/or sediments may cause contamination. Any longer-term interactions are expected to be better observed outside the immediate area of the TWIS. If desired, additional monitoring wells could be drilled between these wells and the seeps. (In the area within the black polygon; the seeps are located within the orange polygon.) (One of these wells could be used to acquire both elevation (Concern 2) and chemistry data.)
- If additional monitoring is desired to evaluate further changes in composition of groundwater as it moves toward the seeps, additional wells could be placed midway between this set of monitoring wells and the seeps in the area within the black polygon. (The seeps are generally located within the orange polygon.)

Concern 3: Pollutants from vehicle/mechanical operations have not been included

Solution 3: Monitor for additional constituents

- To address concerns that there could be fuel spills at the facility, consider adding the following constituents: Benzene, Xylene, Toluene (which also have federal MCLs). Addition of these constituents would also ensure that there was adequate treatment of organics in the proposed wastewater discharge.

Concern 4: Pollutants, such as radionuclides, that may be present in the ore-body have not been included

Solution 4: Monitor for radionuclides constituents

- The following radioactive constituents with federal MCLs could be present in the area bedrock:
  - Alpha Particles
  - Beta Particles and Photon Emitters
  - Uranium
  - Radium

Concern 5: Uncertainty regarding how environmental problems will be prevented (or if necessary addressed)

- MCL exceedances in the groundwater
- Surface water quality degradation at the seeps downgradient from the TWIS

Solutions 5: Several ideas were discussed during our respective meetings with KBIC and KEMC on this topic in late June 2010. These ideas include:

- Cease discharge if MCL is exceeded in the effluent at the points of compliance.
- Cease discharge if surface water quality limits are exceeded in the effluent at the points of compliance
- Develop a corrective action plan if Secondary Drinking Water Standards are exceeded in the effluent at the point of discharge.
- Install groundwater monitoring well(s) downgradient from the TWIS to assess whether groundwater venting to the seeps exceed surface water quality criteria (NOTE: This well(s) should be planned in conjunction with additional monitoring wells discussed under Concerns 1 and 2).
- Cease discharge if surface water quality at the seeps downgradient from the TWIS is expected to be degraded based on the groundwater monitoring identified above.
- Set additional (or more stringent) concentration limits at the points of compliance.
  - Use surface water protective limits at Compliance Point 1 for all analytes
  - Use surface water protective limits at Compliance Point 2 for all analytes